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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/965,877	09/28/2001	Patrick L. Ferguson	COMP:0247 P01-3710	3577

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EXAMINER

DUNCAN, MARC M

ART UNIT	PAPER NUMBER
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2113

DATE MAILED: 09/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/965,877

Applicant(s)

FERGUSON ET AL.

Examiner

Marc M Duncan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 20-29 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-19 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-9 and 11 is/are rejected.
- 7) ☒ Claim(s) 5 and 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Olarig et al.

Claims 1-4, 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olarig et al. in view of Abe et al.

Claims 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olarig and Abe as applied to claim 1 above and further in view of Krueger.

Claims 5 and 10 are objected to.

Claims 12-19 are allowed.

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-19, drawn to hot insertion/removal of a memory cartridge of a redundant memory array, classified in class 714, subclass 7.
- II. Claims 20-29, drawn to delivering encoded fault information to a data controller, classified in class 714, subclass 763.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as a system for hot-plugging memory cartridges. Invention II has separate utility such as encoding error check information for transmission to a data controller in order to determine memory errors. See MPEP § 806.05(d).

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Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Claims 20-29 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in a telephone conversation with Robert Manware, Reg. No. 48,758, on 24 August 2004.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Olarig et al.

Regarding claim 11:

Olarig teaches the memory system comprising a plurality of memory cartridges, comprising the act of independently transitioning each of the plurality of memory cartridges to a redundant-ready state in Fig. 2, col. 1 lines 39-46 and col. 9 lines 55-63. When the memory module is powered and the connector is live, the memory module is used in a redundant, fault tolerant scheme. It is clear, therefore, that the state of being connected, i.e. the first state, is a redundant-ready state as claimed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-4, 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olarig et al. in view of Abe et al.

Regarding claim 1:

Olarig teaches a memory system comprising a plurality of memory cartridges in Fig. 2.

Olarig teaches a data controller configured to independently interpret the transition of the corresponding memory cartridge between a first state of operation and a second state of operation, wherein the first state of operation permits the memory cartridge to be used to store data in a redundant memory array and wherein the second state of operation prevents the memory cartridge from being used to store data in a redundant memory array in Fig. 2, Fig. 5, col. 1 lines 39-46 and col. 9 lines 55-63.

When the memory module is powered and the connector is live, the memory module is

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used in a redundant, fault tolerant scheme. It is clear, therefore, that the state of being connected, i.e. the first state, is a redundant-ready state as claimed. The second state, when not connected, does not allow the memory to be used to store data in a redundant memory array.

Olarig does not explicitly teach each of the plurality of memory cartridges comprising at least one memory device and a memory controller. Olarig does, however, teach a plurality of memory cartridges.

Abe teaches each of the plurality of memory cartridges comprising at least one memory device and a memory controller in paragraph 0076-paragraph 0078.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the memory cartridges of Abe with the hot plug memory system of Olarig.

One of ordinary skill in the art at the time of invention would have been motivated to combine the teachings because the memory cartridges of Abe allow the memories to be hot swapped and allow for protection of crucial data contained in the memory cartridges, both explicitly stated needs of Olarig.

Regarding claim 2:

Olarig teaches wherein the at least one memory device comprises a dual inline memory module (DIMM) in col. 8 line 66.

Regarding claim 3:

Olarig teaches wherein the first state of operation comprises a redundant-ready state of operation in col. 1 lines 39-46 and col. 9 lines 55-63. When the memory module

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is powered and the connector is live, the memory module is used in a redundant, fault tolerant scheme. It is clear, therefore, that the state of being connected, i.e. the first state, is a redundant-ready state as claimed.

Regarding claim 4:

Olarig teaches wherein the memory system is configured to operate in a redundant mode when each of the plurality of memory cartridges is in the redundant-ready state in col. 9 lines 55-63.

Regarding claim 6:

Olarig teaches wherein the plurality of memory cartridges comprises five memory cartridges in Fig. 2. Olarig pictures a plurality of memory cartridges. Five memory cartridges are, therefore, implicitly taught.

Regarding claim 8:

Abe teaches wherein each memory controller is configured to control access to the at least one memory device on the corresponding memory cartridge in paragraph 0078.

Claims 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olarig and Abe as applied to claim 1 above and further in view of Krueger.

Regarding claim 7:

The teachings of Olarig and Abe are outlined above.

Olarig and Abe do not explicitly teach wherein at least one of the plurality of memory cartridges is configured to store parity data. Olarig and Abe do, however, teach a fault tolerant array of memory cartridges.

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Krueger teaches wherein at least one of the plurality of memory cartridges is configured to store parity data in Fig. 1 and the Abstract lines 1-5.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the parity teachings of Krueger with the fault tolerant array of Olarig and Abe.

One of ordinary skill in the art at the time of invention would have been motivated to combine the teachings because Olarig and Abe explicitly state the need for a fault tolerant array in which data can be reconstructed for a replacement memory module. The parity data storage of Krueger meets this explicitly stated need.

Regarding claim 9:

The teachings of Olarig and Abe are outlined above.

Olarig and Abe do not explicitly teach wherein the data controller writes data in a striped fashion across the plurality of memory cartridges. Olarig and Abe do, however, teach a fault tolerant array of memory cartridges.

Krueger teaches wherein the data controller writes data in a striped fashion across the plurality of memory cartridges in the Abstract lines 21-24.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the striping teachings of Krueger with the fault tolerant array of Olarig and Abe.

One of ordinary skill in the art at the time of invention would have been motivated to combine the teachings because Olarig and Abe explicitly state the need for a fault

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tolerant array in which data can be reconstructed for a replacement memory module.

The striping of data taught by Krueger meets this explicitly stated need.

Allowable Subject Matter

Claims 5 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Prior art was not found that explicitly teaches or fairly suggests wherein the second state of operation comprises one of a disable-up state, a disable-down state, a powerup state, a powerdown state, and a verify/replace state of operation as outlined in claim 5. Prior art was not found that explicitly teaches or fairly suggests the group of states including a redundant-ready state, a powerdown state, a powerup state, a disable-down state, a disable-up state, and a verify/replace state as outlined in claims 10 and 12.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art not relied upon contains elements of the instant claims and/or represents a current state of the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc M Duncan whose current telephone number is 703-305-4622. The examiner's telephone number as of October 15, 2004 will be 571-272-3646. The examiner can normally be reached on M-T and TH-F 6:00-4:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on 703-305-9713. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

md



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